Before the Federal Communications Commission Washington, D.C. 20554

FCC 13-39

In the Matter of

ET Docket No. 13-84 Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies
ET Docket No. 03-137 Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields

To: Office of the Secretary Federal Communications Commission (FCC), Washington, DC 20554

Reply Comments Filed by: Angela Flynn, PO Box 1439, Kilauea, HI 96754

November 18, 2013

The FCC has not revised it exposure guidelines for RF/MW since 1996. While they rely on The Institute of Electrical and Electronics Engineers (IEEE) for their exposure guidelines, this organization is comprised of engineers, not doctors, physicists or biologists and the IEEE relies on the measurement of the Specific Absorption Rate (SAR) which can only account for a thermal effect in dead animal tissue and cannot be considered protective for non thermal biological health effects in living beings. SAR, which is currently used for near field measurement cannot measure the cellular, atomic or sub-atomic level of change while it is quite clear from the scientific evidence that there are disturbances and oscillations within cells induced by environmentally accounted RF/MW that do not cause heating.

The Telecommunications Industry Association (TIA) http://www.tiaonline.org/standards/buy-tia-standards is the entity which the FCC proposes to use for "harmonizing" the U.S. RF exposure standards. TIA standards are made up entirely by engineers and it is their business to sell the standards. This conglomerate is made up of 400 telecommunications companies who have an interest in keeping radio frequency (RF) exposure guidelines as high as they can. The FCC ignores the fact that approximately 40% of the world have lower RF exposure guidelines - FCC at 1,000 microwatts per square centimeter (uW/cm2) as compared to Russia, China, Italy, Switzerland, Monaco and some Eastern European countries at 10 uW/cm2.

At heart of this controversy is the debate over thermal versus non thermal effects. This debate is only a debate for engineers. The medical community is well aware of non thermal RF effects and utilizes these effects in medical treatments.

http://en.wikipedia.org/wiki/Pulsed_radiofrequency

"There are two general categories of pulsed radiofrequency field therapies based on their mechanism of action: thermal[5] and non-thermal[6] (athermal). While thermal radiofrequency ablation for tumors and cardiac arrhythmia has been used for over 25 years, non-thermal pulsed radio frequency is currently being developed for the ablation of cardiac arrhythmias and tumors. The technique uses pulsed radio frequency energy delivered via catheter at frequencies of 300–750 kHz for 30 to 60 seconds Thermal pulsed radio frequency takes advantage of high current delivered focally by an

electrode to ablate the tissue of interest. Generally the tissue/electrode temperature reached is 60 to 75 °C resulting in focal tissue destruction. Thermal pulse radio frequency ablation has also been used for lesioning of peripheral nerves to reduce chronic pain. Non thermal therapeutic uses of pulsed radio frequency are currently being used to treat pain and edema, chronic wounds, and bone repair. Pulsed radiofrequency therapy technologies are described by the acronyms EMF (electromagnetic field), PEMF[7][8](pulsed electromagnetic fields), PRF (pulsed radiofrequency fields),and PRFE[9][10] (pulsed radiofrequency energy). These technologies have been varied in terms of their electric and magnetic field energies as well as in the pulse length, duty cycle, treatment time and mode of delivery. Although pulsed radiofrequency has been used for medical treatment purposes for decades, peer reviewed publications accessing the efficacy and physiological mechanism(s) are now starting to appear addressing this technology."
http://www.arthrocare.com/our_technology/ot_coblation_explained.htm

"Coblation technology — a controlled, non-heat driven process — uses radiofrequency energy to excite the electrolytes in a conductive medium, such as saline solution, creating a precisely focused plasma."

There are thousands of studies by biologists which provide proof of non thermal effects from RF exposure at the levels present near cell towers and other infrastructure transmitters as well as from household and hand held wireless devices.

The National Toxicology Program headquartered at the National Institute of Environmental Health Science is currently leading the largest laboratory rodent study to date of which the final results are not expected until 2014. (Ref. - http://www.niehs.nih.gov/health/topics/agents/cellphones/)

Why isn't the FCC waiting for these results before they revise our RF exposure standard?

Why does the FCC rely on engineers rather than biologists for setting biological exposure standards?

Most exposure to RF/MW is involuntary and with no informed consent due to the proliferation of cell towers, WiFi and wireless utility meters and the general lack of public knowledge on the harm from exposure to RF/MW (i.e., people do not read user's manuals which warn not to hold phones and other devices to the head or body or know of the thousands of studies indicating harm from such exposure). These effects include: DNA damage which may lead to cancer, neurodegenerative diseases, reproductive declines or even heritable mutations. Brain tumors, decrease in reproductive capacity, headaches, memory loss, fatigue, insomnia, heart arrhythmias, etc. are reported among people exposed to RF/MW.

The FCC ET Docket No. 13-84 recommends moving to a SAR value only for near and far field exposures. This is entirely inadequate and would also make it impossible for field measurements to verify compliance as it requires a transmitter and a thermal probe inserted into dead animal tissue to measure and verify. (Ref. - http://www.plosone.org/article/info%3Adoi %2F10.1371%2Fjournal.pone.0062663 Evaluation of Specific Absorption Rate as a Dosimetric Quantity for Electromagnetic Fields Bioeffects)

Additionally, the current guidelines are based on a study performed on monkeys which determined that the harmful level of RF/MW exposure was when the monkeys stopped eating. Or as this military report puts it: "The most sensitive and reliable confirmed biological response that could be considered potentially harmful to humans has been found to be the disruption of food-motivated learned behavior." This basis is not up to date science and the guidelines need to reflect the thousands of studies that find

harmful non thermal biological health effects from low level RF/MW exposure. [Ref. - http://health.mil/dhb/afeb/meeting/0417slides/RFR%20Standards.pdf Safety Standards for exposure to RF Electromagnetic Fields]

The guidelines also do not take into account that in 2011 The International Agency for Research on Cancer (IARC) classified RF/MW as a Class 2B Possible Human Carcinogen (May 31, 2011). This is the same class as DDT, lead, dioxin, chloroform, gasoline, diesel fuel, fuel oils, welding fumes, and ethylbenzene. [Ref. - http://www.iarc.fr/en/media-centre/pr/2011/pdfs/pr208_E.pdf IARC CLASSIFIES RADIOFREQUENCY ELECTROMAGNETIC FIELDS AS POSSIBLY CARCINOGENIC TO HUMANS]

"Although it has been argued that RF radiation cannot induce physiological effects at exposure intensities that do not cause an increase in tissue temperature, it is likely that not all mechanisms of interaction between weak RF-EMF (with the various signal modulations used in wireless communications) and biological structures have been discovered or fully characterized. Biological systems are complex and factors such as metabolic activity, growth phase, cell density, and antioxidant level might alter the potential effects of RF radiation. Alternative mechanisms will need to be considered and explored to explain consistently observed RF dependent changes in controlled studies of biological exposure." [emphasis added] [Reference: IARC Monograph, Volume 102, for non-ionizing radiation (and radiofrequency electromagnetic fields), published April 2013, page 104.]

The FCC RF/MW SAR exposure guidelines do not account for non thermal biological health effects. There are thousands of studies and millions of people which provide evidence of a non thermal effect that occurs far below the FCC RF/MW exposure guideline. The exposure guideline needs to be lowered to the recommendation of the BioInitiative Report 2012, comprised by 29 world-recognized experts in science and public health policy. The 2012 update reviewed 1,800 new studies on RF/MW exposure and recommends an RF/MW exposure guideline of .0003 micro watts per square centimeter (uW/cm2) power density value. The current FCC RF/MW exposure guideline is 1,000 uW/cm2 which only allegedly accounts for a thermal effect. (Ref. http://www.bioinitiative.org THE BIOINITIATIVE REPORT 2012 A Rationale for Biologically-based Public Exposure Standards for Electromagnetic Fields (ELF and RF)) Safety standards for sensitive populations need to be set at lower levels than for healthy adult populations. Sensitive populations include the developing fetus, the infant, children, the elderly, those with pre-existing chronic diseases, and those with developed electrical sensitivity (EHS).

Conclusions: We must have biologically based RF/MW exposure guidelines that protect from non thermal effects. The FCC must drop SAR values and use only electric field based power density values. They must lower the exposure value to a level that protects from non thermal biological health effects for the general population and for sensitive populations. It is obvious that other living beings which are smaller than humans would also be considered sensitive populations and special consideration needs to be given to animals and organisms that rely on magnetic fields for navigation and orientation. (Ref. http://www.omicsonline.com/open-access/0974-8369/0974-8369-4-179.pdf? aid=12830 Impacts of radio-frequency electromagnetic field (RF-EMF) from cell phone towers and wireless devices on biosystem and ecosystem – a review)

I am one of the millions of people who have been harmed from RF/MW exposure from our wireless communications transmitters. There is ample epidemiological evidence that low level continuous RF/MW exposure of the type present near cell towers causes harm. (To date the U.S. has not conducted ONE epidemiological study on RF/MW.) There are also millions of people world-wide who have recognized that they are harmed by this low intensity exposure. I, for example, had a close encounter

with cellular antennas located on a building. I developed muscle aches, memory loss and insomnia during this exposure. I was able to make the connection and now go to great lengths to avoid being in the vicinity of RF/MW transmitters in order to stay healthy and functioning. This includes quitting my job and moving from my home. It also includes avoiding homes and businesses that have RF/MW transmitters. (Ref. http://www.nrcresearchpress.com/doi/pdf/10.1139/A10-018 Levitt, B.B. and Lai, H. 2010. Biological effects from exposure to electromagnetic radiation emitted by cell tower base stations and other antenna arrays. Environmental Reviews, 18 : 369-395. DOI:10.1139/A10-018 and http://www.avaate.org/IMG/pdf/ESTUDIO_BRASIL_BrazilCellTowerStudy.pdf Mortality by neoplasia and cellular telephone base stations in the Belo Horizonte municipality, Minas Gerais state, Brazil)

Therefore this proceeding requires a NEPA evaluation contrary to the FCC assertion that it does not. (Ref - http://www.ca6.uscourts.gov/opinions.pdf/10a0374p-06.pdf Per No. 09-5761 Heartwood, Inc., et al. v. Agpaoa, et al. there is standing to challenge the current exposure guidelines because people have suffered an 'injury in fact' that is concrete and particularized; is actual or imminent; is traceable to wireless exposure; and that it is likely that this injury will be redressed by lower exposure guidelines.)

The FCC must work with Congress to re-fund the EPA's non ionizing radiation protection research program for developing safe exposure guidelines because the FCC cannot both promote wireless technologies and regulate RF/MW radiation. The FCC must stop facilitating, encouraging, and supporting the reckless expansion of WiFi and other wireless exposures due to the involuntary exposure of our population to RF radiation which is inherently biological harmful to humans and other living beings.

Most exposure to RF/MW is involuntary and with no informed consent due to the proliferation of cell towers, WiFi and wireless utility meters and the general lack of public knowledge on the harm from exposure to RF/MW (i.e., people do not read user's manuals which warn not to hold phones and other devices to the head or body or know of the thousands of studies indicating harm from such exposure).

Millions of people have managed to make the connection between their ill health and RF/MW exposure, but there are millions more who are being harmed, or have even died from cancers, etc. who do not know the cause or how to protect themselves. The FCC must act responsibly or it will be held accountable for these injuries and deaths and can be sure that every day people are making the connection between their ill health and RF/MW exposure deemed safe by the FCC. This situation will not be tolerated for long.